**Stevens Institute of Technology**
**Department of Electrical and Computer Engineering**

**CpE 462 Introduction to Image Processing**

Homework 6:

**6.1** A skeleton image processing code **imgproc.cpp** is provided. Search online to find:

1. How to install the OpenCV library and use it in this code to read an image from either a file or from your camera
2. Apply the image processing operator in this code on your image. If your image is a color image, you can apply the operator on three color components separately, or you can convert the color image into a gray scale image first and apply the operator on the gray scale image.
3. Display the output image in a window

**Instructions:**
1. Try to use Microsoft Visual Studio Community to compile the code with OpenCV library.
2. The executable need to be run in a console window.
3. Run the executable with appropriate command line options. For example:

```
> imgproc goldhill.jpg testout.jpg
```

> Note: if you want to take an image from your camera, you need to change the code for command line options.

4. Submit your modified code with a few screen shots

**6.2** Based on the **imgproc.cpp**, write a few lines of codes to perform histogram equalization on an input image. Test your code on your image. Show your codes and screenshots of input and output images.

**6.3** Based on the **imgproc.cpp**, write a few lines of codes to filter an input image with a 3x3 mask as we have seen in class. Test your code by applying one of the composite Laplacian operators to your image. Show your codes and screenshots of input and output images.

(Note: when you work on 3x3 filtering, you can not work on the first row and the last row, the first column and the last column. There are many ways to address this issue, but for now you can just output zeros for these rows and columns.)